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(71) Applicant  
Beeson and Sons Limited  
(Incorporated in the United Kingdom)

Hertford House, Denham Way, Rickmansworth, Herts,  
WD3 2XB, United Kingdom

(72) Inventor  
Roger Milner King

(74) Agent and/or Address for Service  
Carpmaels & Ransford  
43 Bloomsbury Square, London, WC1A 2RA,  
United Kingdom

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(56) Documents cited  
GB 2130184 A GB 0674417 A EP 0242475 A  
US 4266687 A US 3946872 A

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## (54) Container seals

(57) A semi-rigid or rigid sealing web 18 is attached by adhesive or welding to the rim 12 of a container neck 10 and a circumferential outer edge of the web 18 extends outwardly beyond the rim to facilitate removal of the web by pushing or by grasping edge 22. Chamfering of rim 12 may provide a circumferential recess to aid opening. The web 18 may comprise a semi-rigid foil or a layer of flexible foil 18b with a semi-rigid backing 18a. The foil may be of metal, eg aluminium, and may be secured to rim 12 by induction welding, and the backing may be of paper or card. The web 18 may alternatively be a rigid metallic layer or a rigid backing with a flexible or semi-rigid layer adhered to it. The neck 10 may have a screw thread portion 16 and a tapered sealing surface 14 for interference fit with a closure. A coloured layer 20 of adhesive may adhere to the rim and to the web 18 so that on removal of the sealing web 18, a coloured residue remains on the surface of the rim 12 to provide a tamper-proof feature.

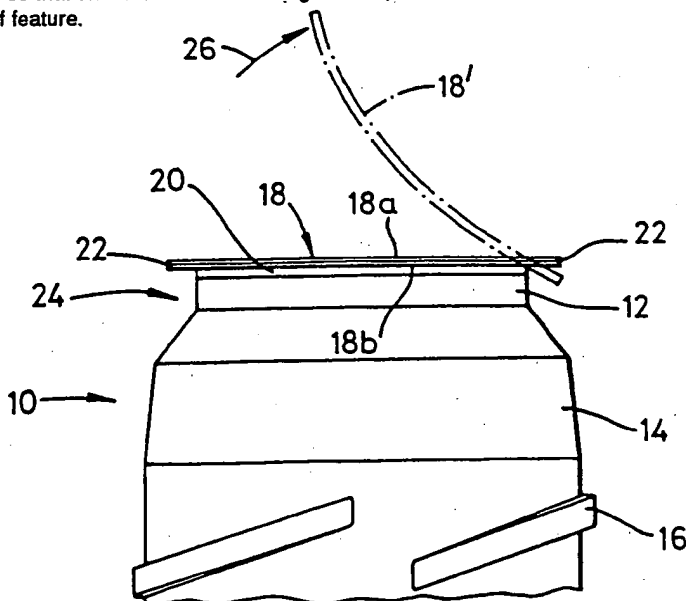


FIG. 1

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1990.

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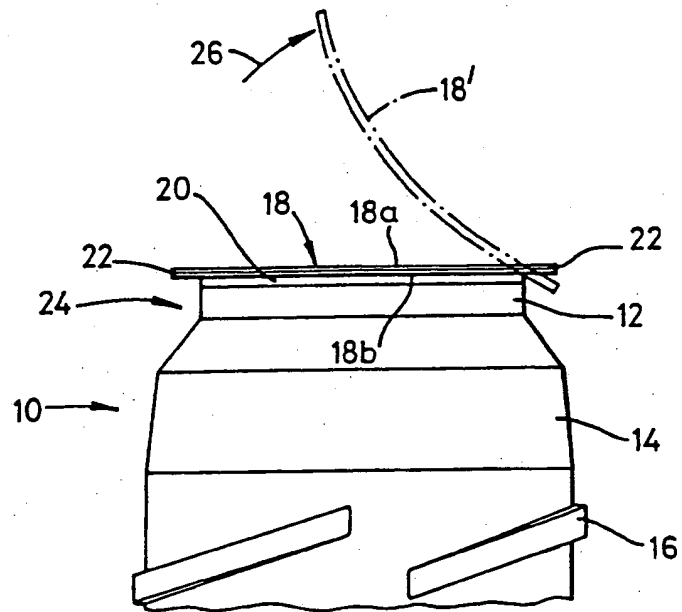


FIG. 1

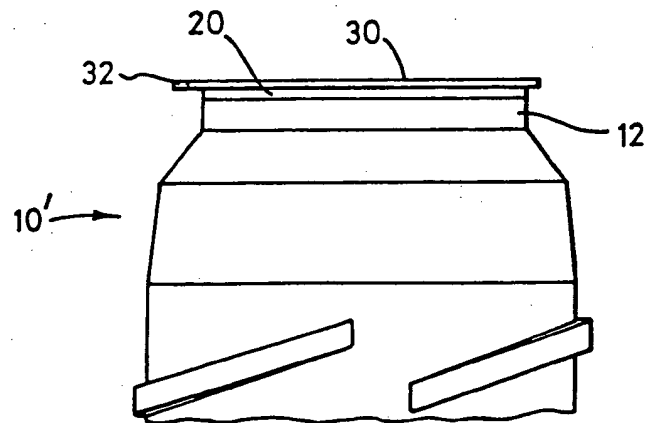


FIG. 2

IMPROVEMENTS RELATING TO CONTAINER SEALS

The present invention relates generally to a sealing arrangement for a container neck. In particular, the invention relates to various aspects of a sealing arrangement of the type which is meant to form a permanent hermetic seal until the container is first opened, whereafter the sealing arrangement is removed and discarded.

Seals of this type are commonly used in containers for food, drinks and medicaments to act as a primary seal until the container is opened for the first time and to provide a tamper-proof feature. A typical type of seal comprises a thin flexible web made of a single material such as foil or paper which is adhered, for example, by adhesive or by heat welding, to the rim of the container. When the container is opened for the first time, the consumer normally has to break the sealing web, or peel the web from the rim to gain access to the container contents.

However, such very thin webs can be difficult or inconvenient to peel because the web has a fairly low resistance to tearing. This can be a particular problem in cases when the bond strength between the web and the rim of the neck is greater than the tearing strength of the web. It has been proposed to provide tabs or projecting edges of the web which can be gripped by finger and thumb to facilitate removal of the web, but this does not completely overcome the problem. Furthermore, to be effective, such tabs or projecting edges have to be made fairly substantial in size to enable a person to grip the tab or projecting edge properly.

In one aspect, the invention has been devised to address this problem.

In this first aspect, the invention provides a sealing arrangement for a container neck, the sealing arrangement comprising a semi-rigid sealing web adhered to the rim of the neck, an edge of the web extending outwardly beyond the rim to facilitate removal of the web in a peel-off manner.

With the invention, removal of the web is simplified

by the peel-off design of the web, and its semi-rigidity which can prevent over-bending and consequent tearing. The semi-rigid design also requires a smaller projecting area than do, for example, the tabs or projecting edges for the 5 thin flexible sealing webs of the prior art.

Preferably, the semi-rigid sealing web comprises semi-rigid foil, or a layer of flexible foil with a semi-rigid backing layer.

For mass production using induction welding, the web 10 preferably comprises a metallic foil on its underside. The web might consist entirely of metallic foil, or it might comprise an upper layer of, for example, paper or card to which the foil is laminated.

The upper surface of the web may carry printed 15 promotional material, and for this it is preferred that the web comprise an upper layer of card or paper so that the material can be printed easily.

Preferably, the edge of the sealing web projects beyond the rim around the entire periphery of the rim.

20 In the case of a circular container neck, the sealing web preferably comprises a circular disc having a diameter slightly larger than the diameter of the rim of the neck, to provide a 360° projecting edge.

By increasing the rigidity of the web, the removal of 25 the web is enhanced by making it more "flip-off" in manner.

In a second aspect, the invention provides a sealing arrangement for a container neck, the sealing arrangement comprising a relatively rigid sealing web adhered to the rim of the neck, an edge of the web extending outwardly beyond 30 the rim to facilitate removal of the web in a "flip-off" manner.

The web in rigid form may be constructed as a rigid metallic layer or as a flexible or semi-rigid layer attached to a rigid backing. The lower surface of the web is 35 preferably metallic so that the web can be secured using induction welding.

In another aspect, the invention relates to a tamper-proof feature for providing an indication once a flexible or

a semi-rigid sealing web has been removed from the container neck rim.

In this third aspect, the invention provides a sealing arrangement comprising a container neck with a rim, a sealing web adhered thereto, and means for providing colouring on the rim of the neck visible once the sealing web is removed, whereby an indication on the rim can be given that the sealing web has been moved.

Preferably, the means for providing the colouring comprises means for providing a coloured residue on the rim, which is visible once the sealing web has been removed.

Preferably, the means for providing the coloured residue on the rim comprises a coloured adhesive used to secure the sealing web to the rim. The adhesive is preferably difficult to scrape or clean off the rim.

Although the above aspects of the invention can be used independently of each other, a particularly advantageous sealing arrangement is provided by combining the third aspect with either the first or second aspect of the invention.

Embodiments of the invention are now described by way of example with reference to the accompanying drawings, in which:

Fig. 1 is a side view of a first sealing arrangement for a container neck; and

Fig. 2 is a side view of a second sealing arrangement for a container neck.

Referring to Fig. 1, a container made of plastics material has a container neck 10 which is adapted to receive a closure (not shown). The neck 10 comprises a rim 12, a tapered sealing surface 14 which is adapted to form an interference fit seal with a corresponding sealing surface (not shown) within the closure, and a screw threaded portion 16 for threadedly retaining the closure on the neck 10.

The neck 10 is sealed by means of a peel-off semi-rigid protective sealing web 18 which is secured to the rim 12 by a thin layer of adhesive 20 (the thickness of which is shown exaggerated in the drawing). The rim 12 is chamfered

radially inwardly around its entire circumference under the sealing web, such that the edge 22 of the sealing web projects radially outwardly beyond the rim 12.

In this exemplary embodiment, the sealing web 18  
5 comprises an upper layer 18a made of paper or card, laminated to a lower layer 18b made of metallic foil, for example aluminum foil. The web is similar to conventional inserts which are welded in place within caps to provide a paper or card sealing surface as part of the cap. However,  
10 for this invention, the conventional insert would be turned upside down so that the metallic foil side is adjacent the container rim. This allows the webs to be sealed to the rims using induction welding techniques.

The chamfering of the rim 12 provides a  
15 circumferential recess 25 to enable a person to push on the underside of the web with his thumb, or grasp the projecting edge 22 with finger and thumb in order lift the edge 22 and peel the sealing web 18 back off the rim 12 (as depicted by the arrow 26, and the sealing web 18' shown in phantom).  
20 The semi-rigidity and resilient flexibility of this web assist the peeling of the web from the rim as one edge is lifted. The web can be removed in one piece, in a single "peeling" action. The sealing web 18 is thus very simple to remove, without suffering from the problem of tearing as  
25 with the thin flexible webs of the prior art.

The adhesive 20 may be coloured a contrasting colour to the container neck 10 and its rim 12. For example the neck 10 may be white, and the adhesive 20 coloured green, or some other alternative, contrasting colour. When the  
30 sealing web 18 is removed, part of the adhesive layer 20 will remain as a coloured residue on the surface of rim 12. This serves as a tamper-proof feature evident

It will be appreciated that in accordance with the first aspect only of this invention, the coloured adhesive  
35 may be replaced by a substantially transparent layer of adhesive which will not give the positive tamper-proof indication. Alternatively, the sealing web 18 could be bonded directly to the rim 12 without using adhesive for

example by heat welding.

It will be appreciated that in accordance with the second aspect of this invention, the semi-rigid web 18 could be replaced by a relatively rigid web which is removed in a flip-off manner. To remove the web, a consumer would then press his thumb against the projecting edge 22 to lift the rigid web up and off the container rim.

Fig. 2 shows a second embodiment of a sealing arrangement for a container neck 10' in accordance only with the third aspect of the invention. The arrangement is similar to that of Fig. 1, and in particular it includes a layer of coloured adhesive on the rim 12 of the container neck 10'. However, the semi-rigid of sealing web 18 of Fig. 1 is replaced by a thin flexible sealing web 30 of foil. The sealing web 30 has a radially projecting tab 32 to facilitate removal of the sealing web 30. As in the previous embodiment, the coloured adhesive 22 provides a positive tamper-evident indication by leaving a coloured residue on the rim 12 when the sealing web 30 is removed.

It will be appreciated that the invention has been described above merely by way of example, and that modifications of detail can be made within the scope of the invention.

CLAIMS

1. A sealing arrangement for a container neck, the sealing arrangement comprising a semi-rigid or a relative rigid sealing web adhered to the rim of the neck, an edge of the web extending outwardly beyond the rim to facilitate removal of the web in a lift-off manner.
2. An arrangement according to claim 1, wherein the web is a semi-rigid web comprising a semi-rigid foil.
3. An arrangement according to claim 1, wherein the web is a semi-rigid sealing web comprising a layer of flexible foil with a semi-rigid backing.
4. An arrangement according to claim 1, wherein the web comprises a rigid metallic layer.
5. An arrangement according to claim 1, wherein the web is a rigid web comprising a rigid backing to which is adhered a flexible or semi-rigid layer.
6. An arrangement according to any preceding claim, wherein the lower surface of the web is metallic to enable the web to be secured on a said container neck by induction welding.
7. An arrangement according to any preceding claim, wherein the edge of the sealing web projects beyond the rim around the entire periphery of the rim.
8. A sealing arrangement comprising a container neck with a rim, a sealing web adhered thereto, and means for providing colouring on the rim of the neck visible once the sealing web is removed, whereby an indication on the rim can be given that the sealing web has been removed.
9. An arrangement according to claim 8, wherein the means for colouring comprises means for providing a coloured residue on the rim, which residue is visible once the



sealing web has been removed.

10. An arrangement according to the preceding claim, wherein  
the means for providing the coloured residue on the rim  
5 comprises coloured material for adhering to the rim.

11. A sealing arrangement for a container neck,  
substantially as hereinbefore described with reference to  
any of the accompanying drawings.

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**Patents Act 1977**  
**Examiner's report to the Comptroller under**  
**Section 17 (The Search Report)**

Application number

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**Relevant Technical fields**

(i) UK Cl (Edition L ) B8T (TCC), B8D (DCA1, DCF11, DCF12, DCF19)

(ii) Int Cl (Edition 5 ) B65D 17/00 51/20 53/04

**Search Examiner**

DAVID MARSH

**Databases (see over)**

(i) UK Patent Office

(ii)

**Date of Search**

28 MAY 1993

Documents considered relevant following a search in respect of claims 1 - 7

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X, Y	GB 2130184 A (PATENT DEVELOPMENTS) Page 1 lines 59-76 and Figure 1	X:1-3, 5, 6 Y:2, 7
X	GB 0674417 (DELA VIENE) Page 2 lines 36-42	1-7
Y	EP 0242475 A2 (CAP SNAP CO) Figures 1 and 3 Column 5 lines 16-17	2, 7
X	US 4266687 (CUMMINGS) Figures 1, 2 and 6 Column 4 lines 22-48	1-3
X	US 3946872 (STURM) Figure 1 and Column 4 lines 38-66	1-3, 5, 6

SF2(p)

MM - doc99\fil001278

Category	Identity of document and relevant passages	Relevant to claim(s)

**Categories of documents**

X: Document indicating lack of novelty or of inventive step.

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E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

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